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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/989,535      | 11/20/2001  | Guanghan Xu          | 28999.39            | 9915             |

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EXAMINER

TORRES, MARCOS L

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2683

DATE MAILED: 04/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/989,535

Applicant(s)

XU ET AL.

Examiner

Marcos L Torres

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claims 1-46 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-2, 5, 19-21, 29-30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Thomas and further in view of Avidor.

As to claims 1 and 2, Wang discloses a method for reducing multi-cell signal interferences in a wireless communication network, the method comprising: dividing an available frequency spectrum into a plurality of channels (see col. 1, lines 58-60); segregating a first wireless communication coverage unit into a first number of geographical segments (see col. 2, lines 5-9); grouping the channels into a second number of channel blocks; assigning each channel block to at least one of the segregated geographical segments (see col. 2, lines 10-14; col. 2, lines 28-39); and repeating the above steps for each neighboring wireless communication coverage unit of the first wireless communication coverage unit (see col. 2, lines 14-15), wherein the channels in different channel blocks exhibit no higher mutual interference (see col. 2, lines 28-39). Wang do not specifically discloses wherein the channel block assigned for each segregated segment of the first wireless communication coverage unit is different from the channel block assigned for the segregated segment of a second wireless communication coverage unit that immediately borders with the segregated segment of the first wireless coverage unit even if the first and second wireless communication coverage units share the same frequency spectrum or assigning each channel block with predetermined priorities. Thomas discloses wherein the channels in different channel blocks exhibit no higher mutual interference than the channels in the same

channel block (see col. 1, lines 33-45), and wherein the channel block assigned for each segregated segment of the first wireless communication coverage unit is different from the channel block assigned for the segregated segment of a second wireless communication coverage unit that immediately borders with the segregated segment of the first wireless coverage unit even if the first and second wireless communication coverage units share the same frequency spectrum (see col. 2, lines 5-14). Avidor discloses assigning each channel block with predetermined priorities (see abstract). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine the teachings of Wang and Thomas for a reliable communication and enhanced bandwidth.

As to claim 19-21 and 30, Wang discloses a method for reducing multi-frequency signal interference in a wireless communication network, the network having a plurality of cells bordering on each other, each cell using a predetermined frequency spectrum for communications therein (see col. 2, lines 28-35; fig. 9), the method comprising: segregating a first cell into a first number of geographical segments (see col. 2, lines 5-9); dividing the predetermined frequency spectrum for the first cell into a plurality of channels (see col. 2, lines 10-14); establishing a channel assignment priority hierarchy for associating one or more channels to each geographical segment of the first cell (see col. 2, lines 28-39); repeating the above three steps for each cell bordering with the first cell (see col. 2, lines 14-15); and assigning channels to a terminal entering a segregated geographical segment of the first cell according to the established channel assignment priority hierarchy (see col. 2, lines 5-8), wherein the channel assignment priority

hierarchy for the first cell and its bordering cells assures that the assigned channels are selected from the channels associated with the geographical segment of the first cell in which the terminal locates (see col. 2, lines 28-39, 1-9; col. 3, 19-20). Thomas discloses and wherein the channels for such a geographical segment are different from the channels of a similarly segregated segment of another wireless cell that immediately borders therewith (see col. 1, lines 33-45), dividing the frequency spectrum into a plurality of channels; grouping the channels into a second number of channel blocks; and prioritizing the channel blocks for servicing each geographical segment based on channel assignment information of neighboring cells of the first cell (see col. 2, lines 5-14). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine the teachings of Wang and Thomas for a reliable communication and enhanced bandwidth.

As to claims 5 and 32, Wang discloses the method wherein the step of segregating further includes segregating the first wireless communication coverage unit into a plurality of sectors around the center of the first wireless communication coverage unit (see col. 3, lines 38-53).

Regarding claim 29 is the corresponding apparatus claim of method claim 1. Therefore, claim 29 are rejected for the same reason shown above.

5. Claims 3 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Thomas and further in view of Avidor as applied to claims 1-2, 5, 19-21, 29-30 and 32 above, and further in view of Tse.

As to claims 3 and 33, Wang and Thomas disclose everything claimed as explained above except for the method wherein the step of segregating further includes radial segregating the first wireless communication coverage unit into a plurality of sectors or segments. Tse discloses the method wherein the step of segregating further includes radial segregating the first wireless communication coverage unit into a plurality of sectors or segments (see col. 6, lines 66-67). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to add this teaching to the modified system of Wang and Thomas for better management of bandwidth.

6. Claims 4, 6, 31 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Thomas and further in view of Avidor as applied to claims 1-2, 5, 19-21, 29-30 and 32 above, and further in view of Ritter.

As to claims 4, 6, 31 and 34, Wang and Thomas disclose everything claimed as explained above except for the method wherein the step of segregating further includes segregating the first wireless communication coverage unit into a plurality of co-centric nested polygon or nested ring areas around the center of the wireless communication coverage unit. Ritter discloses the method wherein the step of segregating further includes segregating the first wireless communication coverage unit into a nested ring areas around the center of the wireless communication coverage unit (see col. 1, lines 32-45). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to add this teaching to the modified system of Wang and Thomas for better management of bandwidth.

7. Claims 9 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Thomas and further in view of Avidor as applied to claims 1-2, 5, 19-21, 29-30 and 32 above, and further in view of He.

As to claims 9 and 37, Wang and Thomas disclose everything claimed as explained above except for the method wherein the step of grouping further includes assigning one or multiple time slots to each channel block. He the method wherein the step of grouping further includes assigning one or multiple time slots to each channel block (see col. 9, lines 49-60). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to add this teaching to the modified system of Wang and Thomas for better management of bandwidth.

8. Claims 10 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wand in view of Thomas and further in view of Avidor as applied to claims 1-2, 5, 19-21, 29-30 and 32 above, and further in view of Shanbhag.

As to claims 10 and 38, Wand and Thomas disclose everything claimed as explained above except for the method wherein the step of grouping further includes assigning one or multiple code channels to each channel block. Shanbhag discloses the method wherein the step of grouping includes assigning one or multiple code channels to each channel block (see par. 0079). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine this teaching in the modified system of Wand and Thomas for enhanced management of resources.

9. Claims 12,14, 16-18, 22, 24, 26-28, 40, 42 and 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Thomas and further in view



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of Avidor as applied to claims 1-2, 5, 19-21, 29-30 and 32 above, and further in view of Bi.

As to claims 12, 16, 22, 26, 40 and 44, Wang and Thomas disclose everything claimed as explained above except for the method further comprising detecting a location of a wireless terminal entering the first wireless communication coverage unit. Bi discloses the method comprising detecting a location of a wireless terminal entering the first wireless communication coverage unit (see col. 3, line 56 – col. 4, line 31). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine this teaching in the modified system of Wang and Thomas for better communication quality.

As to claim 14, 17-18, 24, 27-28, 42 and 45-46, Wang discloses antenna pointing to and covering a segregated geographical segment (see col. 2, lines 5-9; fig. 3). Bi discloses the method of that includes utilizing a plurality of antennas for the first wireless communication coverage unit to identify the wireless terminal using various methods (see col. 1, lines 13-20). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine this teaching in the modified system of Wang and Thomas for better communication quality.

10. Claims 7-8, 11, 35-36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Thomas and further in view of Avidor as applied to claims 1-2, 5, 19-21, 29-30 and 32 above, and further in view of Suzuki.

As to claims 7-8, 11, 35-36 and 39, Wang and Thomas disclose everything claimed as explained above except for the method of grouping further includes

assigning one or more sub carriers to each channel block. Suzuki discloses the method of grouping further includes assigning one or more contiguous sub carriers to each channel block (see col. 11, lines 7-14; col. 24 lines 18-21). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine these teachings for the simple purpose of maximizing available wireless frequency resources.

11. Claims 13, 15, 23, 25, 41 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Thomas in view of Avidor and further in view of Bi as applied to claims 12, 14, 16-18, 22, 24, 26-28, 40, 42 and 44-46 above, and further in view of Engelbrecht.

As to claims 13, 23 and 41, Wang discloses the method of utilizing one or more segregated channels for the segregated geographical segments of the first wireless communication coverage (see col. 2, lines 5-14). Wang and Thomas do not specifically disclose to identify the wireless terminal using access code channels. Engelbrecht discloses identify the wireless terminal using access channel (see col. 8, line 35-38). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to add this technique to the modified Wang, Thomas and Bi system for a better communication having a reduced interference.

As 15, 25 and 43, Wang discloses the method of wherein a channel physical attribute is unique to each geographical segment (see col. 2, lines 5-14) and utilizing an adaptive antenna array for the wireless communication coverage unit (see col. 2, lines 40-44). Therefore, it would have been obvious to one of the ordinary skill in the art at

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the time of the invention to combine these teachings for a better communication having a reduced interference.

***Conclusion***

Any response to this Office Action should be mailed to:

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For formal communication intended for entry, informal communication or draft communication; in the case of informal or draft communication, please label "PROPOSED" or "DRAFT"

Hand delivered responses should be brought to:

Crystal Park II  
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcos L Torres whose telephone number is 703-305-1478. The examiner can normally be reached on 8:00am-5:30pm alt. friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William G Trost can be reached on 703-308-5318. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


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Marcos L Torres  
Examiner  
Art Unit 2683

Mlt



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